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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,196	03/17/2005	Takahisa Miyawaki	000023-062	7017

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EXAMINER	
ORLANDO, MICHAEL N	

ART UNIT	PAPER NUMBER
1791	

NOTIFICATION DATE	DELIVERY MODE
11/19/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/528,196	MIYAWAKI ET AL.	
	Examiner	Art Unit	
	MICHAEL N. ORLANDO	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The arguments and amendments have been fully considered, but the merits of the claims remain unpatentable over the prior art.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-12, 15-23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunihiro et al. (JP 05-295087) in view of Henton et al. (US 4778851) and further in view of Eldin et al. (US 6,111,015).

Regarding claims 1 and 26, Kunihiro et al. discloses a liquid crystal sealing agent composition that is a one component light and heat-curable resin (see the Machine translation, [0001] and [0033]).

(1) In one embodiment, Kunihiro discloses that component (c) is EOCN-1025, i.e. a solid epoxy resin with a softening point above 40°C (See the Machine translation, [0016] and [0017] and [0070] of Kato et al. (20070122742) as evidence of the softening point for EOCN- 1025.

(2) an acrylate monomer (See the Machine translation, [0011])

(3) a light-activated radical polymerization initiator (See the Machine translation, [0011]; and

(4) a latent epoxy curing agent (See the Machine translation, [0011]).

Kunihiro et al. discloses including epoxy resin (c) but does not disclose including a thermoplastic polymer having a softening temperature by the ring and ball method of 50 to 120°C. It is noted that the curing temperatures disclosed by Kunihiro et al. are as low as 100°C (See the machine translation, [0030]).

Henton et al. discloses toughening a wide variety of epoxy resins by adding thermoplastic grafted rubber particles, wherein the grafted rubber particles comprise an acrylate core and ethyl acrylate/methacrylic acid copolymer shell in a preferred embodiment. Henton et al discloses that the grafted rubber particles maintain a substantially constant morphology during curing conditions (i.e. the softening point is above the curing temperature.) See col. 2 lines 1-11, 35-37 and 54, col. 4 line 17 and col. 5 lines 24-34.

It would have been obvious to add the polymeric particles of Henton because such were known for improving the toughness of the epoxy (column 6, lines 51-53). As to the specific use of polymers with a softening point below the curing temperature such would have been obvious for a number of reasons. Firstly, Henton specifically recognizes that softness of particles is a factor which may be optimized to influence the properties of the dispersion and therefore it was already known to modify conditions such as the softness as presently claimed. Secondly, the lowered softening temperature would presumably provide the advantage that it can be accurately dispersed in comparison to solids; however, Henton specifically discloses that rubber particles are soluble in the epoxy (column 4, lines 54-66) and are in a liquid suspension until cured (column 6, lines 35-37) and therefore an equivalent level of dispersion would have been expected. Given the solubility of Henton the alternative lower melting toughener would be expected to produce substantially similar results and would therefore be taken as an equivalent. Still further note that Eldin, drawn to toughened epoxy compositions, indicates that tougheners such as graft polymers (as in Henton) can be useful in a

number of phases and it is known to include them as either solid or liquid (column 3, lines 23-30). In view of Eldin it is clear that it was known to alternatively include such graft particles as in Henton in varying softening temperature because liquid state and solid state graft particle toughness were both known to provide toughening to the epoxy.

As to claim 2, Kunihiro et al. discloses that the composition comprises a partial methacryiic-ized epoxy resin formed by reacting epoxy with an acrylic acid in one embodiment, i.e. a partially esterfied epoxy resin obtained by reacting an epoxy resin with a compound having at least one methacryloyl or acryloyl group and at least one carboxyl group in the molecule as evidenced by the Applicant's Specifications regarding acrylics [0076]. See [0012] of the machine translation of Kunihiro.

As to claims 3 and 15, it is noted that EOCN- 1025, previously mentioned in the rejection of claim 1, ranges in number-average molecular weight from 500 to 2000 as evidenced by applicant's Specifications regarding epoxy cresol novalacs [0037].

As to claims 4, 6, 11, 16 and 18, Kunihiro et al. discloses that components (a) and (c) are included in 20 to 80 weight sections and component (b) is included in 30 to 70 weight sections ([See [0027] of the machine translation). It is noted that this range substantially encompasses the following claim limitations:

i.) the solid epoxy resin (1) is contained in an amount of 5 to 40 parts by weight in 100 parts by weight of the liquid crystal sealing agent composition and

ii.) (1) is contained in an amount of 20 to less than 200 parts by weight per 100 parts by weight of (2).

iii.) (1) and (2) combined in a total amount of 160 to 800 parts by weight per 100 parts by weight of(6). See [0027] of the machine translation.

Absent unexpected results, one of ordinary skill in the art would recognize to use any of the weight percents disclosed by Kunihiro et al. as modified by Henton et al. including those claimed.

As to claims 9 and 21, (3) Kunihiro et al. does not disclose a thermoplastic component (3) of claim 1 that is contained in an amount of 2 to 4(i parts by weight per 100 parts by weight of the liquid crystal sealing agent composition. However, Henton et al. discloses that the thermoplastic strengthening component is typically included in the range from about 2 to 45 weight percent of the epoxy resin dispersion, with the optimum concentration varying depending upon the materials employed and the end use that is envisioned (col. 5 lines 62 to col. 6 line 1). Again, the range disclosed by Kunihiro et al. in view of Henton et al. substantially encompasses the range disclosed by Applicant.

As to claims 5 and 17, Kunihiro et al. discloses that (2) is tetraethylene glycol diacrylate in one embodiment, i.e. (2) ranges in number-average molecular weight from 250 to 2000 and has a Fedors theoretical solubility parameter (sp value) in the range of 10.0 to 13.0 (cal/cm3)'/2 as evidenced by Applicant's Specifications regarding polyethylene glycol diacrylates [0041]. See the Machine translation of Kunihiro, [0015]. As to claims 10 and 22, Kunihiro et al. uses dicyandiamide as the amine-based latent curing agent, i.e. an amine-based latent curing agent with a melting point or a ring and ball method softening temperature of 100°C or above as evidenced by the Applicant' s

Specifications, [0072] of 2006/0009579 A1 (See the Machine translation of Kunihiro, [0021]).

As to claims 12 and 23, because the liquid crystal sealing agent composition is consistent and in agreement with that claimed and disclosed by applicant, it is considered to have the same glass transition temperature and gel fraction as that disclosed by applicant.

As to claims 7 and 19, the particles disclosed by Henton et al. has core diameters within 0.9 and 2 micrometers in order to enhance stability of the dispersion. It is noted that the shell for these size of particles do not significantly increase the size of the particles. (col. 4 lines 47-52 and col. 6 lines 17-21).

As to claims 8 and 20, Kunihiro et al. does not disclose that (3) comprises substantially spherical particles having a core-shell structure, and a core layer of the core-shell structure comprises an elastomer obtained by copolymerizing an acrylate monomer and/or a methacrylate monomer with a monomer copolymerizable therewith (claims 8 and 20). The rejection of claim 1 is relied on.

5. Claims 13, 14, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunihiro et al., Kato et al. and Henton et al. and Eldin et al. (US 6,111,015), as applied to claims 1-12 and 15-23 above, and further in view of Nobumasa et al. (JP 63-179323).

Regarding claims 13, 14, 24 and 25, Kunihiro et al. discloses a method of manufacturing a liquid crystal display panel comprising light curing followed by heat curing but does not disclose performing one drop fill in which the sealing agent is

thereafter cured ([0032] and [0046]). However, Nobumasa et al. discloses that one may easily prepare a liquid crystal display element without allowing air bubbles to remain in the liquid crystal by dropping a required amount of weighed liquid crystal (performing one drop fill) on the inside of the sealing agent and thereafter curing the sealing agent (See the Machine translation, Abstract). It would have been obvious at the time of invention to one of ordinary skill in the art to fabricate the liquid crystal display panel disclosed by Kunihiro et al. as modified by Henten et al. with the method taught by Nobumasa et al. in order to easily prepare a liquid crystal display element without allowing air bubbles to remain in the liquid crystal.

Response to Arguments

Applicant's arguments filed July 22, 2008 have been fully considered but they are moot in view of the new grounds of rejection.

The applicant contends the softening temperature is not taught by the art of record.

In view of this new limitation the claims have been addressed accordingly as seen above.

The applicant contends that the graft particles of Henton are used for different purpose, toughening rather than compatiblizing. The examiner sets forth that the softness was known as an optimizable feature, the dispersion and functional rates would be expected to be similar and therefore equivalents and that it was known in the art to include such toughening graft polymers in varying softening temperatures as

evidenced by Eldin whereby both liquid and solid initial state tougheners were presented.

The Examiner finds this argument unpersuasive because it is not necessary that the same motivation exist so long as there is some suggestion, motivation, or incentive to combine the teachings of the prior art. In re Dillon, 16 USPQ2d 1897 (Fed. Cir. 1990).

The applicant contends unexpected results.

The unexpected results, are still not commensurate with the scope of the protection sought because they only disclose a few data points and do even present the boundary data such as that immediately before and after 50 and 120 degrees respectively except for the presentation of 122 degrees. If the softening temperature does unexpectedly produce a superior bonding agent within said range the range would need to more accurately set forth in the experiments with more data points such as ones closer to 50 and 120 to show that the claimed range is responsible for the unexpected results especially in the lieu of the fact that the prior art has already recognized the use of such components in varying melting ranges such as in liquid and solid form. While softening temperatures of 105 and 80 may very well yield increased results to those outside the range it is unclear if temperatures such as 50, 60, 70, 110, and 120 would also yield such a variation in bonding strength and characteristics and therefore the examiner is not able to properly determine the patentability of the claimed range based on so few data points and the large discrepancy between especially data points 40 and 80 degrees. The applicant has therefore failed to overcome the

obviousness rejection of the examiner in view of an unsatisfactory unexpected results showing as set forth above.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL N. ORLANDO whose telephone number is (571)270-5038. The examiner can normally be reached on Monday-Friday, 7:30am-5:00pm, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip C. Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MO

/Philip C Tucker/

Supervisory Patent Examiner, Art Unit 1791